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10/589,091	06/05/2007	Uwe Schierhorn	06-479	5492

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EXAMINER	
KOAGEL, JONATHAN BRYAN	
ART UNIT	PAPER NUMBER
3744	
MAIL DATE	DELIVERY MODE
04/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,091	SCHIERHORN, UWE	
	Examiner	Art Unit	
	JONATHAN KOAGEL	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09 August 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the supercooler as an internal heat exchanger in claim 11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The disclosure is objected to because of the following informalities: The legal phraseology “comprising” is used in the abstract. Appropriate correction is required.

Claim Objections

Claims 7-13 are objected to because of the following informalities: The recitation “each said refrigeration consumer being assigned a modified linear compressor or a conventional compressor, which includes a bypass line" is unclear in context. It is not clear which type of compressor is assigned a bypass line. As best understood, this recitation has been interpreted as a conventional compressor assigned a bypass line. Regarding claim 7, “the at least one evaporator having expansion members” is unclear in context and should be changed to --the at least one refrigeration consumer having expansion members-- for clarity. Also the recitation “and/or the modified linear

compressors" should be changed to --or the modified linear compressors-- for proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "modified expansion valve" is unclear in context when given the definition "realization of a fluid connection" as defined in the specification on page 2 line 2. Examiner as best understood interprets this definition to be in fluid communication with a refrigerant line.

The recitation "modified linear compressor" is unclear in context with given the definition "realization of a fluid connection" as defined in the specification on page 2 lines 2-6. This limitation, as best understood, has been interpreted as being in fluid communication with a refrigerant line.

Also in claim 7, it is unclear in the recitation "the expansion members being designed as modified expansion valves and/or as modified linear expansion machines or being assigned bypass lines". It is best understood that the expansion members are conventional valves that are assigned bypass lines or the expansion members are modified expansion valves or the expansion members are modified linear expansion machines.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno et al. US Patent No. 6,131,401 and further in view of McCarty US Patent No. 4,285,210.

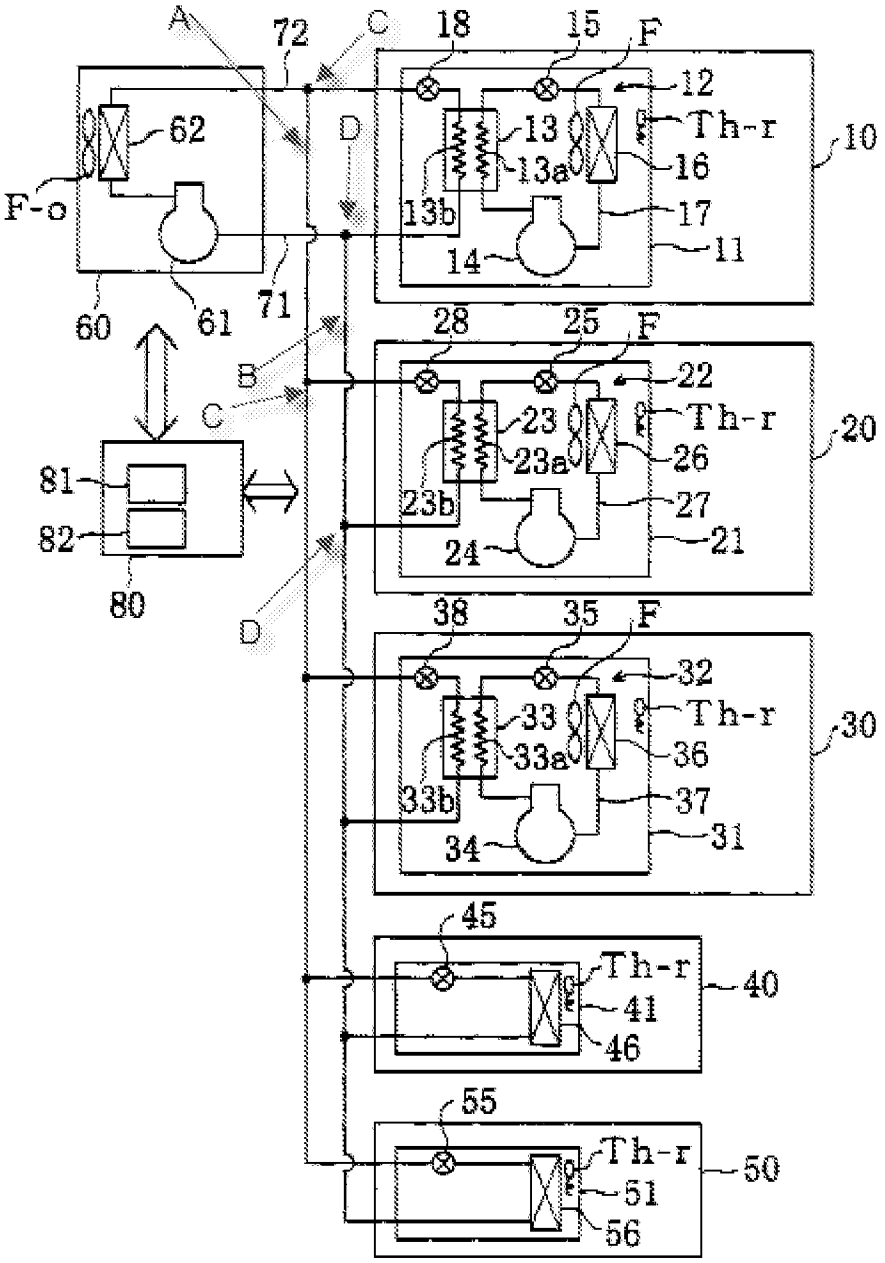
Regarding claim 7, Ueno teaches in fig. 1, a refrigeration installation having at least one refrigeration consumer 10, 20 which includes at least one evaporator 16, 26, having at least one feed line A (See annotated figure below) and at least one discharge line B (See annotated figure below), via which a refrigerant is fed to the at least one refrigeration consumer 10, 20 and discharged from the at least one refrigeration consumer 10, 20, the at least one refrigeration consumer 10, 20 having expansion members 15, 25 wherein, the expansion members 15, 25 being designed as modified expansion valves, each refrigeration consumer 10, 20 being assigned a conventional compressor 14, 24 and the modified expansion valves 15, 25 having a working position that is capable of allowing flow to pass through without a significant pressure drop (column 4 lines 1-11, column 5 line 13-column 6 line 57). Before the operation of the compressor, the modified expansion valves would be in a working position because a pressure drop would not exist within the system. Ueno fails to explicitly teach a compressor with a bypass line.

However, McCarty teaches in fig. 3, a refrigerant consumer 10 being assigned a conventional compressor 36 which includes a bypass line 31, (column 2 line 56-column 3 line 15).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify Ueno with the teachings of McCarty to include a bypass line in order to create a non restrictive refrigerant defrost flow path which allows a warmer gaseous refrigerant to flow through the evaporator in order to raise the temperature of the evaporator and melt frost when present (McCarty column 2 line 56-column 3 line 15).

Regarding claim 8, Ueno as modified above teaches the invention as disclosed and further teaches in fig. 1, wherein the at least one refrigeration consumer 10, 20 has a dedicated closed refrigerant cycle 12, 22, the refrigerant cycle 12, 22 being operatively connected via at least one liquefier 13, 23 to the at least one feed line A and the at least one discharge line B, the refrigerant cycle 12, 22 in each case having modified expansion valves 15, 25 and conventional compressors 14, 24, and the evaporator 16, 26 of said at least one refrigeration consumer 10, 20 in each case being arranged higher than the liquefier 13, 23 of the said at least one refrigeration consumer 10, 20 (column 4 lines 1-11, column 5 line 13-column 6 line 57). From a horizontal reference point of view in fig. 1 where a left direction is defined as a lower point and a right direction is defined as a higher point, the evaporator is arranged higher than the liquefier. McCarty further teaches in fig. 3, a conventional compressor 36 with an associated bypass line 31.

Regarding claim 13, Ueno teaches the invention as disclosed and further teaches in fig. 1, a method for operating a refrigeration installation comprising assigning at least one conventional compressor 34. McCarty further teaches a method for operating a refrigeration installation, comprising assigning at least one conventional expansion valve 27 of the at least one refrigeration consumer bypass lines 31 and 29, and during a defrosting phase of the at least one refrigeration consumer, opening the bypass lines and taking the at least one associated conventional expansion valve 27 and the at least one associated conventional compressor out of operation (column 2 line 56-column 3 line 15, column 6 line 22-column 7 line 5).


A
72
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18
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62
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33a
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33b
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Th-r
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56

Ueno Fig. 1

Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno and McCarty as applied to claim 7 above, and further in view of Fixemer US Patent No. 5,752,726.

Regarding claim 9, Ueno as modified above teaches the invention as disclosed and further teaches in fig. 1, wherein a plurality of refrigeration consumers 10, 20 are connected to the at least one feed line A (at point C, see annotated figure above) and the at least one discharge line B (at point D, see annotated figure above). Ueno fails to explicitly teach the connection is by means of couplings.

However, Fixemer teaches in fig. 1 a coupling for a refrigerant line (column 5 line 54-column 6 line 59).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combined teachings of Ueno and McCarty with the teachings of Fixemer to include a coupling in order to insure a proper seal between the feed/discharge lines and the refrigeration consumer, so refrigerant does not leak which would cause the compressor to become damaged from a lack of refrigerant.

Regarding claim 10, Ueno as modified above teaches the invention as disclosed and Fixemer further teaches in fig. 1, wherein said couplings are quick fit couplings (column 5 line 54-column 6 line 59).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno and McCarty as applied to claim 7 above, and further in view of Sakamoto et al. JP Publication No. 2003-065616.

Regarding claim 11, Ueno as modified above teaches the invention as disclosed but fails to explicitly teach a supercooler as an internal heat exchanger within the refrigeration consumer.

However, Sakamoto teaches in fig. 9, a supercooler 49 as an internal heat exchanger (pg. 8 paragraph 42).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combined teachings of Ueno and McCarty with the teachings of Sakamoto to include a supercooler in order to obtain a very low temperature refrigerant for the purposes of supplying the evaporator of the system with this low temperature refrigerant, which allows the evaporator to be used in a cooling space with a high cooling demand.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno and McCarty as applied to claim 7 above, and further in view of Monfarad US Publication No. 2004/0065111 A1.

Regarding claim 12, Ueno as modified above teaches the invention as disclosed and McCarty further teaches in fig. 3, a method for operating the refrigeration installation comprising assigning at least one refrigeration consumer 10 modified expansion valve 27 (expansion member 27 is considered to be a modified expansion

valve because it is in fluid communication with the refrigeration consumer) and modified compressor 36 (examiner is interpreting compressor 36 to be a modified compressor because it is in fluid communication with the refrigeration consumer) and during the defrosting phase of the at least one refrigeration consumer 10 moving at least one of the modified expansion valves 27 and at least one of the compressors 39 of the refrigeration consumer 10 which are to be defrosted into a working position in which through flow without a significant pressure drop is possible (column 2 line 56-column 3 line 15). McCarty teaches that when a defrost cycle begins, the compressor is turned off and therefore the compressor is no longer creating a high pressure on one side in the system and the expansion valve will no longer be creating a low pressure on the other side of the system. Because of this, there will be an unchanged pressure within the system and it will not have a pressure drop. However, Ueno as modified fails to explicitly teach a linear compressor.

However, Monfarad teaches a linear compressor (pg. 4 paragraph 36).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combined teachings of Ueno and McCarty with the teachings of Monfarad to include a linear compressor in order to allow the compressor to be made smaller and produce less vibrations (pg. 4 paragraph 36) which allows for the machine room to be smaller, giving more room in the cooling space. Since the linear compressor has less vibrations, any fittings attaching refrigerant pipes to the compressor will be prevented from loosening and causing the compressor to leak.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN KOAGEL whose telephone number is (571)270-7396. The examiner can normally be reached on Monday through Friday 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on (571)272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. K./
Examiner, Art Unit 3744
03 April 2009

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit 3744